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ABSTRACT

The Cellular Learning Theory Model is based on the premise that all formalized instruction and pedagogical strategies can be reduced to a common denominator: personal interactions with people, places, and things. The learning/teaching process consists of two unique, but interrelated variables: primary and secondary cells. Primary Learning Cells are those organizational structures/patterns directly related to instruction and learning, e.g., self contained classrooms, team teaching, and individualized instruction. Secondary Learning Cells include Instructional Media Cells that have a specific effect upon learning and skills, and Organizational Cells, which are strategies and designs used to affect learning and to maximize human interactions. A description is offered of how this model enables the teacher to dissect the complicated and multifaceted instructional process and to analyze the components which make up a particular lesson or learning activity. (JD)

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APPLICATION OF THE CELLULAR LEARNING
THEORY MODEL TO THE PROFESSIONAL
EDUCATION OF PRESERVICE TEACHER
TRAINEES AND THE INSERVICE TRAINING
OF CLASSROOM TEACHERS AND SUPERVISORS

Dr. Richard O. Peters

MARCH 1981

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ABOUT THE AUTHOR

Richard O. Peters is currently Social Studies Department chairperson at Timberlane Regional High School and has also been Accountability (minimum competency) LOCAL PLANNING GROUP chairperson, Timberlane Regional School District (NH), since Fall 1978.

He received his Bachelor of Science in Education and Master of Education degrees from The University of Maine (Orono); pursued doctoral studies at The Florida State University (Tallahassee); and was granted the Doctor of Education degree in Curriculum from The University of Rochester (NY).

Dr. Peters has years of practical experience in the field of American public school education. He has been a classroom teacher (grades 5-12); department chairperson; ESEA Title III project curriculum researcher; curriculum coordinator (K-12); supervisor of student teachers at The University of Rochester; developer of primary/secondary source curricula at The Florida State University laboratory school; supervisor of teacher inservice education programs (K-12); and administrator/director of a five year NIE funded EXPERIMENTAL SCHOOLS project for K-12 curriculum development and teacher inservice training.

Dr. Peters is a member of DELTA TAU KAPPA (FSU) and ALPHA KAPPA DELTA (USC) as well as a member of NCSS (National Council for the Social Studies) advisory committees.

SYNOPSIS

For the past thirteen years this author has been developing and applying components of the cellular learning theory model (CLM) to the training of both preservice teacher trainees and inservice educators in order to affect their understanding about and utilization of the myriad of variables which comprise the instructional/learning processes.

CLM is an approach to the conceptualization of the formal teaching/learning process(es), and a way to better understand the interrelationships and varied 'mixes' of model components which can be planned and organized to affect the professional development of teachers -- both present and future.

TODAY

As we begin the decade of the 1980's there can be heard, across the land, a call for a return to the 'basics'. A return to a time and place, at least in the mind, when the things around us were less-complicated and our lives were more-secure. We are confronted with a movement to return to a time when the ultimate purpose of the formal education process was to teach the 3R's -- and little more!

In 1981 many school systems, and even state legislatures and departments of education, have undertaken the task of building curricula based upon the staples of American education; namely, reading-writing-arithmetic. As these 'basic' or minimum competency programs are developed we find that changes in the curriculum result in changes in other aspects of the education process.

- 1) Monies are reallocated to 'beef up' the basics;
- 2) New time schedules are developed -- allowing for more time per day in the 3R areas than in other less-basic subjects;
- 3) Administrative management plans are designed to provide the blueprint for curriculum/student/teacher accountability;
- 4) New testing programs are developed;
- 5) Greater community involvement in curriculum planning; and
- 6) Staff development plans are created/revised to provide for teacher inservice training in 'basic' or minimum competency areas of the instructional plan or design.

Traditionally, both preservice teacher training and teacher inservice programs have been the domain of institutions of higher education. In recent years, with the advent of school system level staff development programs, teacher inservice training has become a shared domain -- with school system-based program experiences being recognized as valid and worthwhile alternatives to college/university level evening or summer session courses.

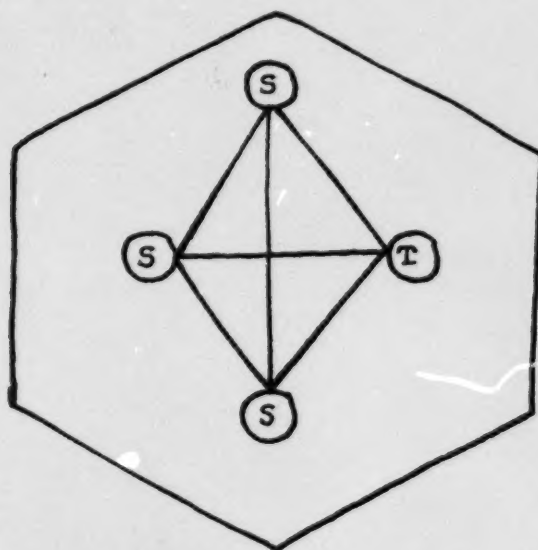
Using the cellular learning theory model (CLM) inservice staff members and preservice trainees can be trained at the school building level rather than in isolated college/university classrooms re the 'basics' of the instructional program.

CLM

As described in "Essays on the Nature and Structure of Teacher Education in America as Related to the Learning Process"¹ the cellular learning theory model consists of primary and secondary cells which have both a direct and indirect effect upon instruction and learning.

¹ Richard O. Peters, "Essays on the Nature and Structure of Teacher Education in America as Related to the Learning Process", Resources In Education, 1976.
ED 113 324

CLM is a psychovisual construct; that is, a model which provides for the inclusion of several components (factors) that collectively make up the process called formal education. The model is based upon the premise that all formalized instruction and pedagogical strategies can be reduced to a common denominator; personal interaction(s) with people, places, and things. The learning/teaching process consists of two unique, but interrelated, variables; primary and secondary cells. ²



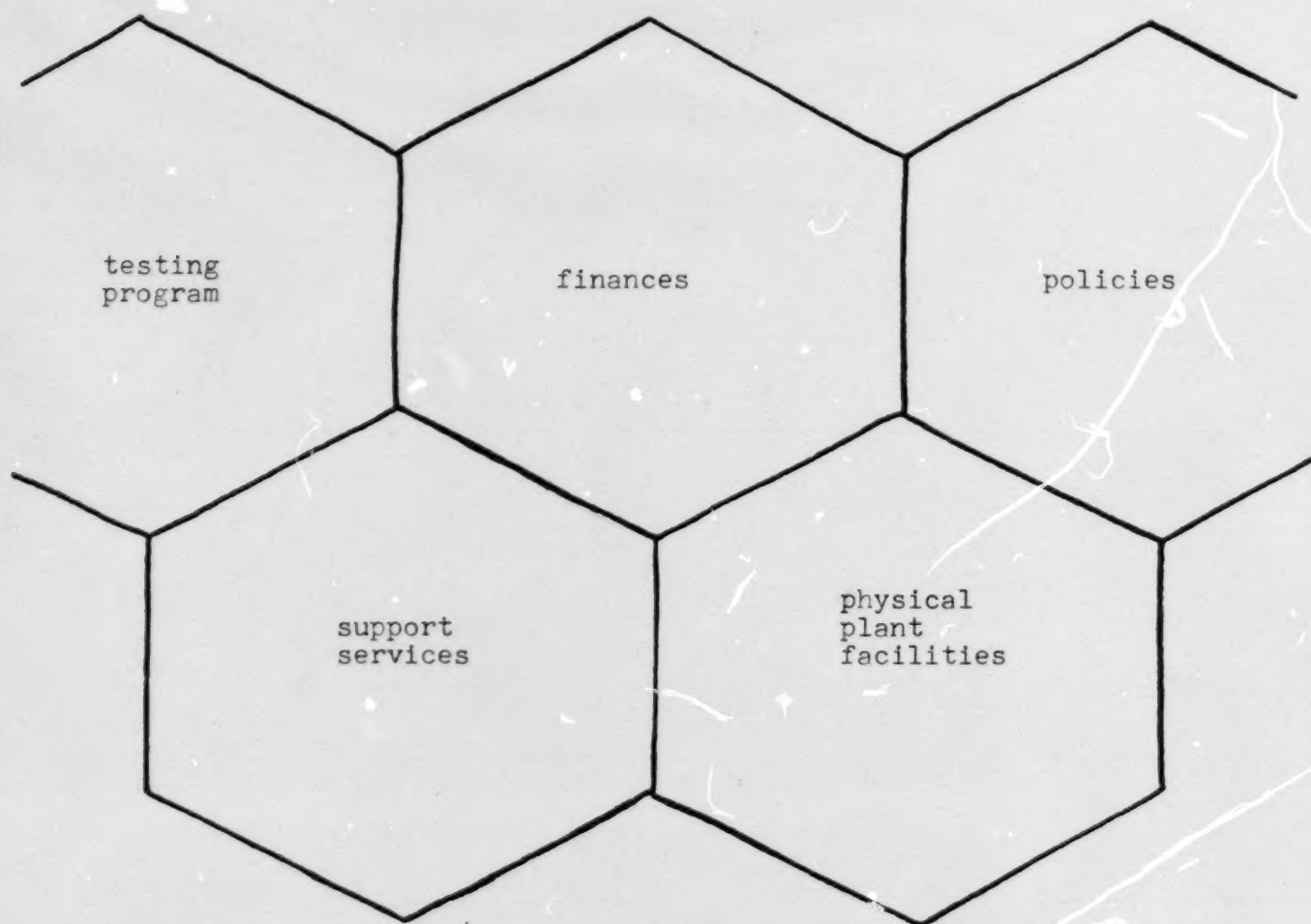
A Student/Teacher (S/T) Interaction Based
Primary Learning Cell

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Richard O. Peters, "Models for Teacher Preservice and Inservice Training and Curriculum Development in America's Public Schools: Theories That Work!", Resources In Education, 1980. ED 190 534

Primary Learning Cell(s). PLC's are those organizational structures/patterns directly related to instruction and learning, e.g., self contained classrooms, team teaching, and individualized instruction.

Secondary Learning Cell(s). SLC's are instructional hardware/software, financial resources, community group support, local school policies, etc. which enhance and reinforce affective, cognitive, and psychomotor skills development among students.

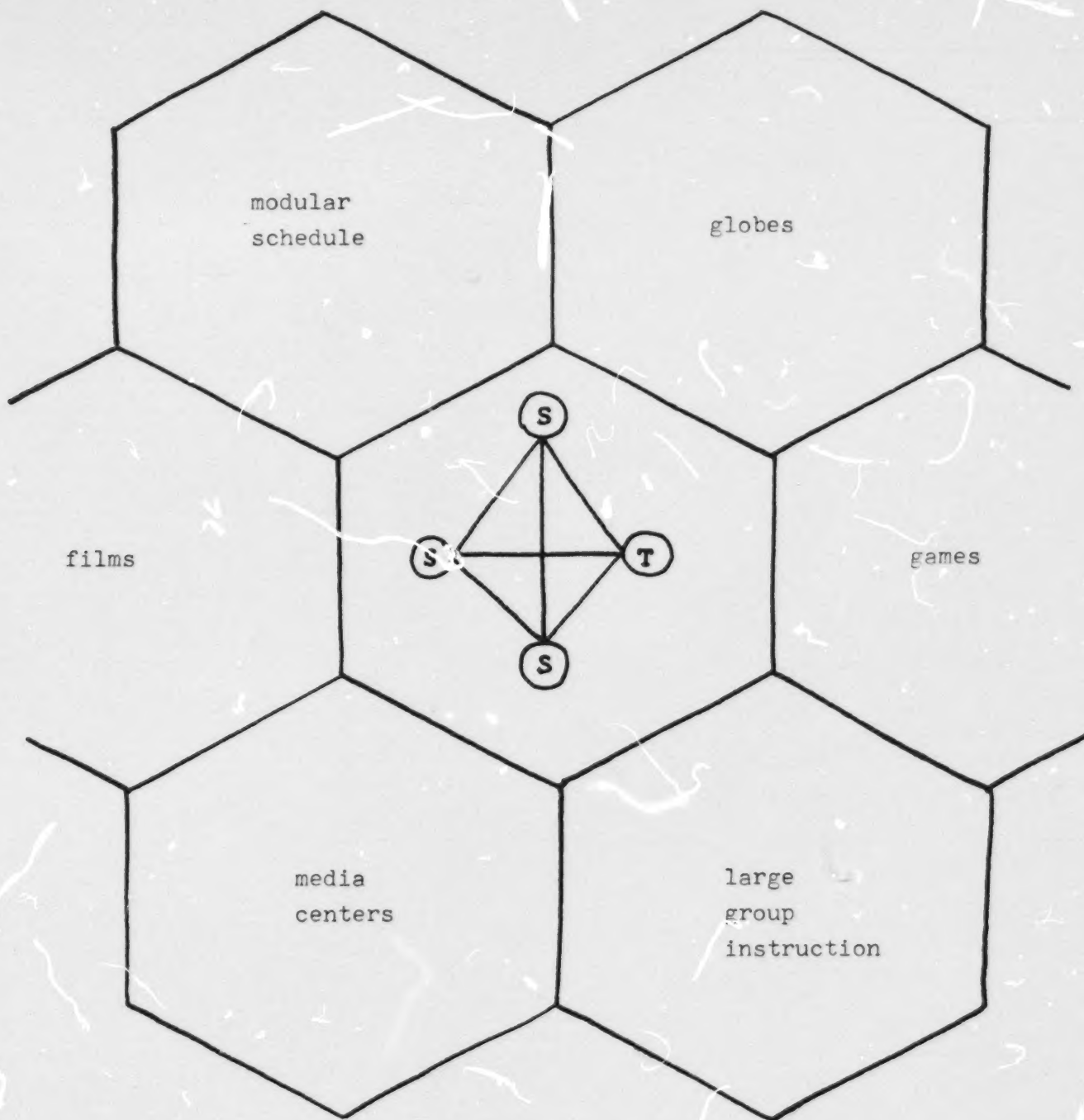


Secondary learning cells can be subdivided into:

Instructional Media Cell(s). IMC's deal with hardware/software which affect teaching and learning. Each IMC is the domain of a particular device or material which possesses unique characteristics/qualities/properties and which has a specific effect upon learning and skills development.

Organizational Cell(s). OC's are strategies and designs used to affect learning and to maximize human interaction(s).

Collectively, the several primary and secondary cells (PLC's and SLC's) form a 'honeycomb' design. Teachers must be trained in and become sensitive to the constant need for a harmonious blending of PLC's and SLC's in order to enhance student learning and enrich the instruction process.



Combining CLM with the 'return to the basics' movement, inservice teachers and preservice trainees involved with practice teaching in classrooms can be trained in developing a sensitivity toward and understanding of the relationship(s) among and between PLC's and SLC's in diverse situations -- as the instructional process attempts to equip students with life survival skills.

CASE STUDIES

A) Operation EPIC. During the 1968-1969 school year teachers involved with the ESEA Title III funded Experimental Program In Curriculum (EPIC), King Junior High School, Portland, Maine, participated in an inservice training program related to curriculum development, exposure to community resources, and interaction with multimedia based instruction. In the course of inservice program development, attention was paid primarily to the PLC component of the cellular learning theory model.

B) Student Teachers. From September through December 1969 student teachers in social studies education at The University of Rochester were involved with school site based training activities related to the

Secondary Learning Cell component of ClM; namely, instruction in the operation and use of video tape equipment as an instructional tool in the classroom.

C) Research Study. During the 1970-1971 school year this author conducted a Secondary Learning Cell oriented doctoral dissertation study. The study compared the effects of direct and media based vicarious experiences on student factual recall. Attention was paid to the use of soundfilm field trip tours through selected community resource sites -- with an emphasis on student awareness of/exposure to world of work careers and occupations.

D) Experimental Schools Project. From July 1973 through July 1978 this author was directly involved in the development and delivery of K-12 instructional programs and teacher inservice training re career education, environmental education, and language arts. Attention was paid to teacher exposure to/involvement with multimedia devices and community resources -- to enrich the instruction process.

E) Accountability. The development of minimum competency programs in language arts, mathematics, and the social studies (grades 4/8/11) and related inservice education with emphasis on teacher acquisition of 'basic'

content and skills, and the instruction process.

From 1968 to present the cellular learning theory model has been constructed, applied and tested, evaluated, and revised in real school world settings; namely, classrooms, teacher workshops, and program development projects.

FROM THEORY TO PRACTICE

There are several facts which cannot be ignored or denied.

- 1) The cellular learning theory model has been tested and it does work!
- 2) Many school systems are planning a return to the basics.
- 3) Veteran teachers and teacher trainees must be continually involved in staff development programs in order to update knowledge and to enrich instructional skills.
- 4) Teachers will be held more-accountable for students' knowledge acquisition and mastery of life survival skills.
- 5) Education as 'preparation for life' will take on a more global perspective both in content and presentation.
- 6) Audiovisual materials will play an ever

increasing role/importance in the development of global awareness concepts on the part of students.

In order for educators to be 'on top' of these and other truisms there is a need for the application of a psychovisual construct to their on-going learning and skills acquisition/application. That construct is the cellular learning theory model.

There are several ways by which educators can be exposed to and learn about CLM factors/variables.

1) Courses. Enrollment in formal classes of instruction either on college/university campuses or at public school buildings. Activities can be held after school hours or an early release program can be developed to enable teachers/supervisors/student teachers to participate in these activities during the course of the school day. Courses can relate to subject matter content, methods, audiovisuals, instructional materials, classroom/student management, etc. . Courses can be taken for graduate school credit, recertification credit, staff development credit or any combination thereof.

2) "How To Do It" Workshops. Participation in hands-on and demonstration type activities geared to content knowledge enrichment, instructional techniques, and skills development. These activities are generally held at the school building site and could be offered to staff either during the school day or after school hours.

3) Awareness Tours. Involvement in excursions into the community - to visit resource sites/people or other schools for purposes of observing processes/techniques related to content/skills being taught in classrooms.

4) Peer Projects. Teachers work together in areas related to subject matter content, instructional techniques, and self/other evaluation re classroom instruction.

5) Trainee Awareness. Student teachers are involved in training sessions conducted by building level teachers/supervisors in areas related to subject matter, content, instructional techniques, and classroom/pupil management as well as student evaluation re the acquisition/demonstration of learned knowledge and skills.

6) Team Projects. Veteran teachers and student teachers pair-off and work on projects related to the various aspects of the instructional process.

7) Case Studies. Teachers select topics related to the instructional process and research each as related to students and their acquisition of content knowledge and skills development.

8) Hypotheticals. Working together, classroom teachers/student teachers/supervisors create learning environment situations. They identify each aspect of the situation created and role play those involved in that true-to-life environment. Each aspect of the role playing situation is analyzed and critiqued. Video tapes of the 'situation(s)' can be made and used for purposes of self/other evaluation.

In all of these activities a variety of instructional techniques and materials can be employed. In some instances professors from local/area colleges/universities may provide the best service to meet the needs of teachers/trainees/supervisors - while in other circumstances needs may best be met by:

- 1) veteran classroom teachers;
- 2) community resource people;
- 3) consultants;
- 4) state department of education personnel;
- 5) company representatives (of manufactured educational materials);

or

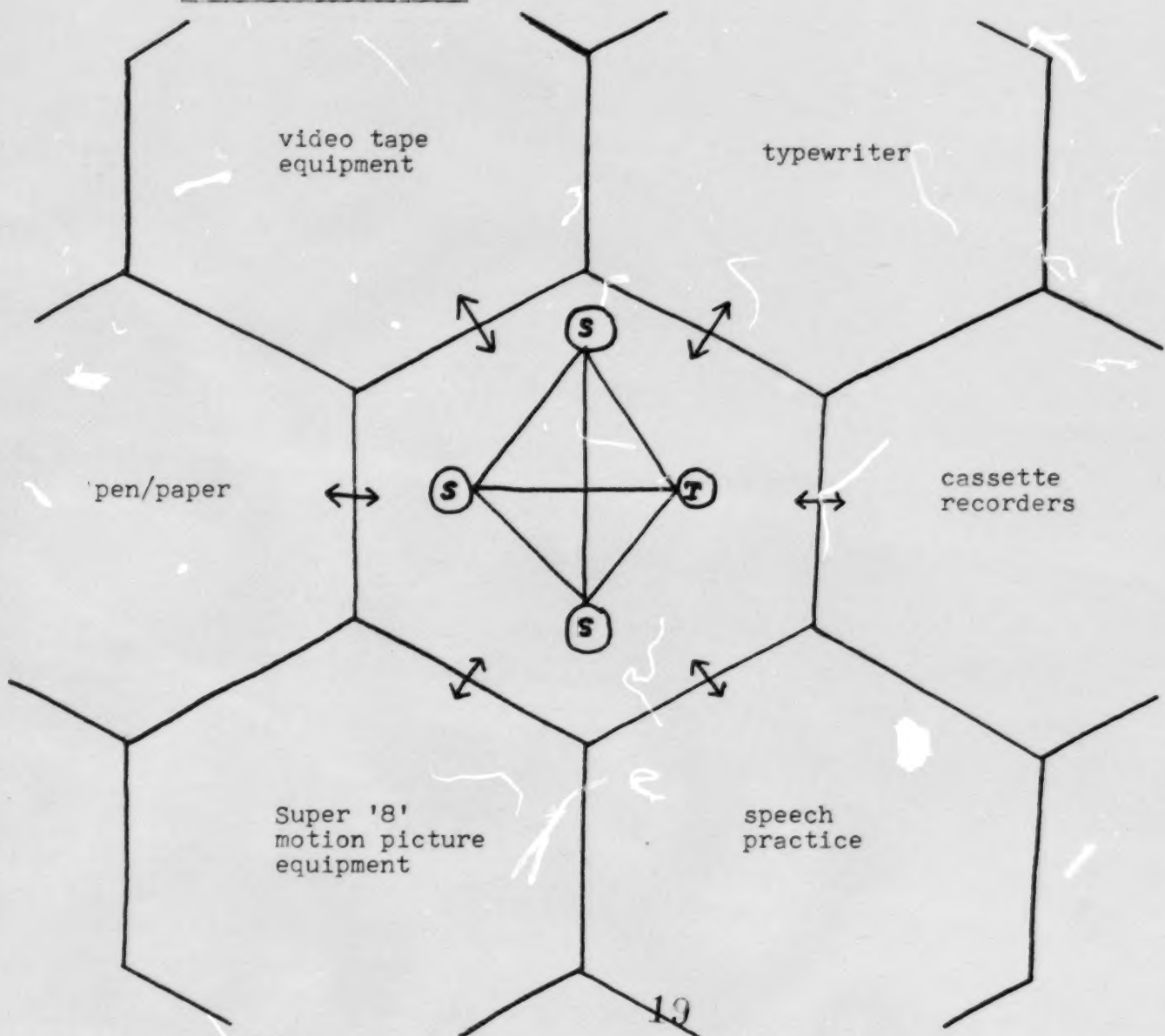
- 6) any combination of the above.

FOR EXAMPLE

In developing its minimum competency program, school system XYZ has decided to build its instructional curriculum around 1) teacher directed learning in the classroom, 2) student exposure to community resource people/sites, 3) field based experiences for students, and 4) audiovisual materials which provide a basis for vicarious experiences and exposure - on the part of students.

One area of competency development (knowledge/skills) is the student's ability to communicate an idea or factual data to others. How can this be done - to accommodate the diverse abilities of students?

As depicted by cellular learning theory variables, the core of communication skills development is the student/teacher interaction Primary Learning Cell. It is surrounded by several Secondary Learning Cells with which the student(s) and teacher interact -- in order to achieve the stated goal: the communication of ideas and/or factual data.



The cellular learning theory model, in this instance, provides for (through the several SLC's) diverse student abilities and interests. Some students may be interested in/ skilled in working with graphic media devices in order to communicate ideas or data while other students prefer to use more traditional methods such as verbal communications (e.g., speeches) or written reports. The CLM allows for this diversity. Some students may be interested in communicating with only a few classmates while others dream of communicating with others unseen. Some may choose person-to-person/ face-to-face contact while others plan to communicate with people many miles away. Certainly, different styles/techniques/materials will be used -- depending upon the individual's goal or target (s) of the communicated message. The CLM allows for this diversity.

In order for students and teachers to know what options are available to them, in order to achieve the stated communication goal, and to skillfully choose the most appropriate option(s) for a given situation -- they must, first, be familiar with the character and function of several Secondary Learning Cell materials/devices.

Student knowledge about/familiarity with diverse Secondary Learning Cell materials/methods is greatly effected by and dependent upon the teacher's previously acquired level of knowledge re SLC's. The more indepth the teacher's working knowledge of SLC's the greater the quantity and quality of SLC knowledge and skills transmitted to students via the teaching/learning process.

As a result of student/teacher interaction in the Primary Learning Cell (as depicted in the diagram on page 15) students begin to develop an ability to recognize the value of each SLC and to skillfully create 'mixes' of various SLC's to affect the communication process. Additional exposure to and experience with SLC's will enrich the student's ability to critically select and skillfully use those SLC's which best serve the needs of a particular situation. The notion of 'practice makes perfect' does rightfully apply to this situation.

STATEMENT

Rather than limiting those options for instruction, available to the classroom teacher, and stifling his or her professional creativity, the cellular learning theory model enhances and encourages the use of diverse instructional techniques and promotes professional creativity. CLM challenges the development and growth of each individual's potential -- whether he/she be a student or a teacher!

CLM enables the individual teacher to dissect the complicated and multifaceted instructional process -- to analyze the components which make up that particular lesson or learning activity. Each activity is a planned design comprised of several strategies and diverse materials, and each is as unique as those individuals involved with or effected by it. What works for one teacher may not/will not necessarily work for others -- in the same way and to the same degree of success. Each individual must discover what works best for him or her and then proceed to design strategies which best compliment their strengths. In some situations, it may be necessary for a given teacher to merely rearrange the sequence of activities and materials usage of the instructional design

created by a fellow teacher, or it may be necessary for that individual to create a completely different learning environment or set of instructional circumstances based upon any combination of the following factors:

- 1) the interests of the teacher and/or students;
 - 2) experiences in the life of the teacher;
 - 3) the nature and character of professional training/experiences;
 - 4) physical plant facilities;
 - 5) readily available materials - types and quantities;
 - 6) the abilities of students;
 - 7) student grouping styles -- heterogeneous or homogeneous;
 - 8) community involvement in and support of the school curriculum;
 - 9) the amount of time allocated for an activity; and
 - 10) the amount of available financial resources made available to the schools,
- as well as
- 11) the personality of the teacher.

Each of these factors - or any combination thereof - will have an effect on decisions made regarding which PLC's and SLC's will be incorporated into the instructional design of a given lesson or instructional activity. Thus, it is imperative that each and every teacher assess his/her personal abilities/experiences/interests , as well as the goals of instruction in the classroom, and create a mix of PLC's and SLC's which best meet the needs of students and will guarantee instructional goal attainment.

What the cellular learning theory model is saying to classroom teachers and trainees is that each teaching/ learning situation is unique and that an attempt must be made, on each of these occasions, to identify and use those PLC and SLC elements which best serve the needs of those involved in the activity. NO lesson or learning activity can remain the same in content and presentation from year-to-year and class-to-class because people and circumstances are always in flux (changing) and new 'mixes' must be constantly sought after in order to meet these changes and demands.

CLM is simply a tool to be used by teachers and supervisors to affect student learning and to create those environments most conducive to personal growth and accomplishment.

Peters